

Section 7. Speed Adjustment

5-7-1. APPLICATION

Keep speed adjustments to the minimum necessary to achieve or maintain required or desired spacing. Avoid adjustments requiring alternate decreases and increases. Permit pilots to resume normal speed when previously specified adjustments are no longer needed.

NOTE-

It is the pilot's responsibility and prerogative to refuse speed adjustment that he/she considers excessive or contrary to the aircraft's operating specifications.

a. Consider the following when applying speed control:

1. Determine the interval required and the point at which the interval is to be accomplished.

2. Implement speed adjustment based on the following principles.

(a) Priority of speed adjustment instructions is determined by the relative speed and position of the aircraft involved and the spacing requirement.

(b) Speed adjustments are not achieved instantaneously. Aircraft configuration, altitudes, and speed determine the time and distance required to accomplish the adjustment.

3. Use the following techniques in speed control situations:

(a) Compensate for compression when assigning air speed adjustment in an in-trail situation by using one of the following techniques:

- (1) Reduce the trailing aircraft first.
- (2) Increase the leading aircraft first.

(b) Assign a specific airspeed if required to maintain spacing.

(c) Allow increased time and distance to achieve speed adjustments in the following situations:

- (1) Higher altitudes.
- (2) Greater speed.
- (3) Clean configurations.

(d) Ensure that aircraft are allowed to operate in a clean configuration as long as circumstances permit.

(e) Keep the number of speed adjustments per aircraft to the minimum required to achieve and maintain spacing.

b. Do not assign speed adjustment to aircraft:

1. At or above FL 390 without pilot consent.
2. Executing a published high altitude instrument approach procedure.
3. In a holding pattern.

REFERENCE-

FAAO 7110.65, Holding Instructions, Para 4-6-4.

4. Inside the final approach fix on final or a point 5 miles from the runway, whichever is closer to the runway.

c. At the time approach clearance is issued, previously issued speed adjustments shall be restated if required.

d. Approach clearances cancel any previously assigned speed adjustment. Pilots are expected to make their own speed adjustments to complete the approach unless the adjustments are restated.

e. Express speed adjustments in terms of knots based on indicated airspeed (IAS) in 10-knot increments. At or above FL 240, speeds may be expressed in terms of Mach numbers in 0.01 increments for turbojet aircraft with Mach meters (i.e., Mach 0.69, 0.70, 0.71, etc.).

NOTE-

1. Pilots complying with speed adjustment instructions should maintain a speed within plus or minus 10 knots or 0.02 Mach number of the specified speed.

2. When assigning speeds to achieve spacing between aircraft at different altitudes, consider that ground speed may vary with altitude. Further speed adjustment may be necessary to attain the desired spacing.

REFERENCE-

FAAO 7110.65, Methods, Para 5-7-2.

5-7-2. METHODS

a. Instruct aircraft to:

1. Maintain present/specific speed.
2. Maintain specified speed or greater/less.
3. Maintain the highest/lowest practical speed.
4. Increase or reduce to a specified speed or by a specified number of knots.

PHRASEOLOGY-
SAY AIRSPEED.

SAY MACH NUMBER.

MAINTAIN PRESENT SPEED.

MAINTAIN (specific speed) KNOTS.

MAINTAIN (specific speed) KNOTS OR GREATER.

DO NOT EXCEED (speed) KNOTS.

MAINTAIN MAXIMUM FORWARD SPEED.

MAINTAIN SLOWEST PRACTICAL SPEED.

INCREASE/REDUCE SPEED:

TO (specified speed in knots),

or

TO MACH (Mach number),

or

(number of knots) KNOTS.

EXAMPLE-

"Increase speed to Mach point seven two."

"Reduce speed to two five zero."

"Reduce speed twenty knots."

"Maintain two eight zero knots."

"Maintain maximum forward speed."

NOTE-

1. A pilot operating at or above 10,000 feet MSL on an assigned speed adjustment greater than 250 knots is expected to comply with 14 CFR Section 91.117(a) when cleared below 10,000 feet MSL, within domestic airspace, without notifying ATC. Pilots are expected to comply with the other provisions of 14 CFR Section 91.117 without notification.

2. Speed restrictions of 250 knots do not apply to aircraft operating beyond 12 NM from the coastline within the U.S. Flight Information Region, in offshore Class E airspace below 10,000 feet MSL. However, in airspace underlying a Class B airspace area designated for an airport, or in a VFR corridor designated through such as a Class B airspace area, pilots are expected to comply with the 200 knot speed limit specified in 14 CFR Section 91.117(c). (See 14 CFR Sections 91.117(c) and 91.703.)

3. The phrases "maintain maximum forward speed" and "maintain slowest practical speed" are primarily intended

for use when sequencing a group of aircraft. As the sequencing plan develops, it may be necessary to determine the specific speed and/or make specific speed assignments.

b. To obtain pilot concurrence for a speed adjustment at or above FL 390, as required by para 5-7-1, Application, use the following phraseology.

PHRASEOLOGY-

(Speed adjustment), IF UNABLE ADVISE.

EXAMPLE-

"Reduce speed to one niner zero, if unable advise."

c. Simultaneous speed reduction and descent can be extremely difficult, particularly for turbojet aircraft. Specifying which action is to be accomplished first removes any doubt the pilot may have as to controller intent or priority. Specify which action is expected first when combining speed reduction with a descent clearance.

1. Speed reductions prior to descent.

PHRASEOLOGY-

REDUCE SPEED:

TO (specified speed),

or

(number of knots) KNOTS.

THEN, DESCEND AND MAINTAIN (altitude).

2. Speed reduction following descent.

PHRASEOLOGY-

DESCEND AND MAINTAIN (altitude).

THEN, REDUCE SPEED:

TO (specified speed in knots),

or

TO MACH (Mach number),

or

(number of knots) KNOTS.

NOTE-

When specifying descent prior to speed reduction, consider the maximum speed requirements specified in 14 CFR Section 91.117. It may be necessary for the pilot to level off temporarily and reduce speed prior to descending below 10,000 feet MSL.

d. Specify combined speed/altitude fix crossing restrictions.

PHRASEOLOGY-

CROSS (fix) AT AND MAINTAIN (altitude) AT (specified speed) KNOTS.

EXAMPLE-

"Cross Robinsville at and maintain six thousand at two three zero knots."

REFERENCE-

FAAO 7110.65, Numbers Usage, Para 2-4-17.

FAAO 7110.65, Altitude Information, Para 4-5-7.

5-7-3. MINIMA

When assigning airspeeds, use the following minima:

a. To aircraft operating between FL 280 and 10,000 feet, a speed not less than 250 knots or the equivalent Mach number.

NOTE-

1. On a standard day the Mach numbers equivalent to 250 knots CAS (subject to minor variations) are:

FL 240-0.6

FL 250-0.61

FL 260-0.62

FL 270-0.64

FL 280-0.65

FL 290-0.66.

2. If a pilot is unable to comply with a speed assignment lower than the minima specified in this paragraph, the pilot will advise.

b. To arrival aircraft operating below 10,000 feet:

1. Turbojet aircraft. A speed not less than 210 knots; except when the aircraft is within 20 flying miles of the runway threshold of the airport of intended landing, a speed not less than 170 knots.

2. Reciprocating engine and turboprop aircraft. A speed not less than 200 knots; except when the aircraft is within 20 flying miles of the runway threshold of the airport of intended landing, a speed not less than 150 knots.

c. Departures:

1. Turbojet aircraft. A speed not less than 230 knots.

2. Reciprocating engine and turboprop aircraft. A speed not less than 150 knots.

d. Helicopters. A speed not less than 60 knots.

REFERENCE-

FAAO 7110.65, Methods, Para 5-7-2.

5-7-4. TERMINATION

Advise aircraft when speed adjustment is no longer needed.

PHRASEOLOGY-

RESUME NORMAL SPEED.